Analysis and Mitigation of Increased Traffic Impacts on the Environment (AMITIE), Phase I

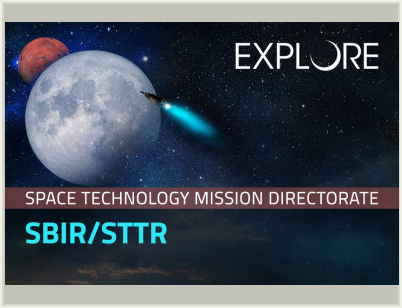
Completed Technology Project (2007 - 2007)

Project Introduction

Metron Aviation designs and develops an integrated methodology and supporting algorithms for estimating environmental impacts of increased traffic on the surface and in the terminal airspace, and extends beyond estimation to identify key causes and develop mitigation options. From previous work, we provide multi-dimensional impact calculation in terms of noise, emissions, and fuel usage, as well as measurement of these impacts with respect to both baseline and alternative future scenarios. In AMITIE we add the following capabilities critically important to design of the next-generation system within environmental constraints: Automated identification of scenario elements causing the principal environmental impacts; Automated generation of mitigation options; and Quantification of the benefits of the mitigation options. The specific technical objectives are: Integrated estimation/mitigation methodology that provides the basis for closing the feedback loop from environmental impacts to system design and development. Develop supporting algorithms that calculate the appropriate metrics, analyze them to identify major causes of impacts, and generate mitigation options that reduce the impacts. Develop a software prototype that implements the estimation, analysis, and mitigation algorithms. Exercise the prototype against test cases to demonstrate the feasibility and value of the approach

Anticipated Benefits

Potential NASA Commercial Applications: Other Government Agencies Other Government agencies involved with the development of NGATS include FAA and the Departments of Defense, Commerce, and Transportation. Each of these agencies will face the need to estimate and mitigate environmental impacts of different aspects of NGATS. The will also require quantitative analysis of selected alternative design elements. Commercial - Aviation-related commercial firms of all types (airlines, airports, aerospace companies, consultants, etc.) need access to a methodology and algorithms that will help them identify and mitigate the aspects of increased traffic that contribute most to environmental impacts associated with aviation noise, emissions, and fuel consumption.



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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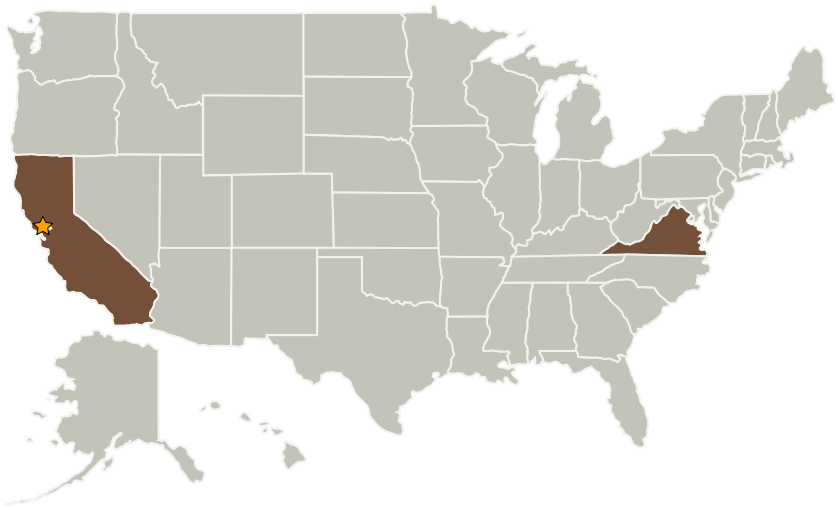
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Metron Aviation, Inc.	Supporting Organization	Industry	Dulles, Virginia

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Terence R Thompson

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.1 Integrated Systems and Ancillary Technologies